

APPLICATION NO. 10/023,632
EXAMINER: AMANDA T. LE

RESPONSE FILED: 9/30/2005
ART UNIT: 2634

LISTING OF PENDING CLAIMS

Please replace any previous version of the claims with the following:

1. (Currently Amended) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:

~~transmitting~~, once per predetermined interval of time[,] ~~by the transceiver~~, ~~transmitting~~ a signal comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;

~~generating at the subscriber unit~~, ~~generating~~-frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;

converting the frequency response estimates into a time domain response ~~to generate~~ ~~generating~~ an impulse response once per interval of time;

filtering the impulse responses over a plurality of intervals of time;

determining a channel profile from the filtered impulse responses;

converting the channel profile to the frequency domain ~~generating to generate~~ a channel interpolator; and

generating the characterized frequency response from the channel interpolator and the frequency response estimates.

2. (Original) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein filtering the impulse responses over a plurality of intervals of time comprises:

averaging the impulse responses over a plurality of intervals of time.

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3. (Original) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein filtering the impulse responses over a plurality of intervals of time comprises:
accumulating the impulse responses over a plurality of intervals of time.

4. (Original) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein filtering the impulse responses over a plurality of intervals of time comprises:
weighted averaging of the impulse responses over a plurality of intervals of time.

5. (Original) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 4, wherein the weighted averaging is dependent upon at least one of a phase error between the impulse responses, and an amplitude error between the impulse responses.

[5] 6. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein determining a channel profile from the filtered impulse responses comprises peak detecting the filtered impulse responses.

[6] 7. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein determining

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a channel profile from the filtered impulse responses comprises detecting elements of the filtered impulse response having amplitudes greater than a predetermined threshold.

[7] 8. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein generating the characterized frequency response from the channel interpolator and the frequency response estimates comprises convolving the channel interpolator with the frequency response estimates.

[8] 9. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein the channel interpolator is re-determined after the transmission of a predetermined number of transmitted signals.

[9] 10. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein the channel interpolator is determined only a single time and remains fixed during the transmission of many signals.

[10] 11. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein converting the frequency response estimates into a time domain response generating an impulse response once per interval of time comprises:

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generating an impulse response by performing an IFFT on the frequency response estimates once per interval of time.

[11] 12. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 1, wherein converting the channel profile to the frequency domain generating a channel interpolator comprises:

performing an FFT on the channel profile ~~generating to generate~~ a channel interpolator.

[12] 13. (Currently Amended) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:

~~transmitting~~, once per predetermined interval of time[,] by the transceiver, ~~transmitting~~ a signal comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;

~~generating~~, at the subscriber unit, ~~generating~~ frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;

filtering the frequency response estimates over a plurality of intervals of time;

converting the filtered frequency response estimates into a time domain response

~~generating to generate~~ an impulse response once per interval of time;

determining a channel profile by peak detecting the impulse response;

converting the channel profile to the frequency domain ~~creating to create~~ a channel interpolator; and

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generating the characterized frequency response from the created channel interpolator and the frequency response estimates.

[13] 14. (Withdrawn) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:

once per predetermined interval of time, the transceiver transmitting a signal comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;

the subscriber unit generating frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;

converting the frequency response estimates into a time domain response generating an impulse response once per interval of time;

filtering the impulse responses over a plurality of intervals of time;

determining a channel by peak detecting the filtered impulse responses;

converting the channel to the frequency domain creating the characterized frequency response.

[14] 15. (Currently Amended) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:

transmitting, once per predetermined interval of time[,] by the transceiver, ~~transmitting~~ a signal comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;

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generating, by the subscriber unit, generating frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;
filtering the frequency response estimates over a plurality of intervals of time;
converting the filtered frequency response estimates into a time domain response
generating a filtered impulse response once per interval of time;
determining a channel by peak detecting the filtered impulse responses;
converting the channel to the frequency domain to create ~~creating~~ the characterized frequency response-; and
convolving the channel interpolator with the frequency response estimates generating to generate the characterized frequency response.

[15] 16. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 14 15, wherein filtering the frequency response estimates over a plurality of intervals of time comprises:
averaging the frequency response estimates over a plurality of intervals of time.

[16] 17. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim 14 15, wherein filtering the impulse responses over a plurality of intervals of time comprises:
accumulating the frequency response estimates over a plurality of intervals of time.

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[17] 18. (Currently Amended) The method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit of claim ~~14~~ 15, wherein filtering the frequency response estimates over a plurality of intervals of time comprises:
weighted averaging of the frequency response estimates over a plurality of intervals of time.

[18] 19. (Currently Amended) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:
~~receiving, once per predetermined interval of time, the subscriber unit receiving a signal~~
comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;
~~the subscriber unit generating frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;~~
~~the subscriber unit converting the frequency response estimates into a time domain response generating an impulse response once per interval of time;~~
~~the subscriber unit filtering the impulse responses over a plurality of intervals of time;~~
~~the subscriber unit determining a channel profile from the filtered impulse responses;~~
~~the subscriber unit converting the channel profile to the frequency domain generating to~~
generate a channel interpolator; and
~~the subscriber unit generating the characterized frequency response from the channel interpolator and the frequency response estimates.~~

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[19] 20. (Currently Amended) A method of characterizing a frequency response of a transmission channel between a transceiver and a subscriber unit, the method comprising:

receiving, once per predetermined interval of time, ~~the subscriber unit receiving~~ a signal comprising multiple carriers, a plurality of the carriers comprising training symbols, a plurality of the carriers comprising information symbols;

~~the subscriber unit~~ generating frequency response estimates at the frequencies of the carriers comprising training symbols each interval of time;

~~the subscriber unit~~ filtering the frequency response estimates over a plurality of intervals of time;

~~the subscriber unit~~ converting the filtered frequency response estimates into a time domain response generating a filtered impulse response once per interval of time;

~~the subscriber unit~~ determining a channel by peak detecting the filtered impulse responses; and

~~the subscriber unit~~ converting the channel to the frequency domain ~~creating to detect~~ the characterized frequency response.